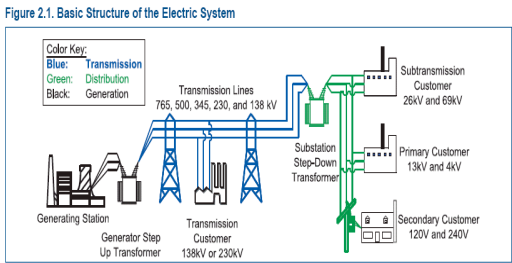
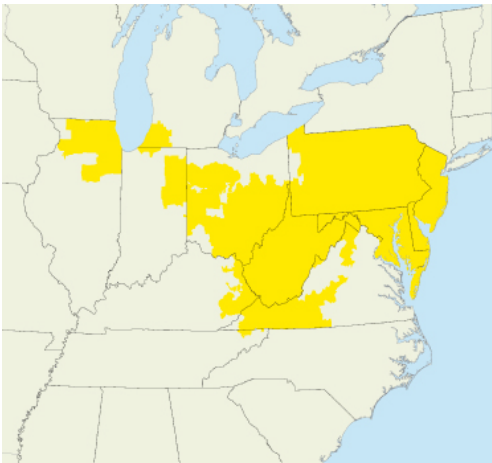


Diagram of Electric System



◇ U.S.-Canada Power System Outage Task Force ◇ August 14th Blackout: Causes and Recommendations ◇ 5

Map of PJM Control Area



1993 - 2002 New Jersey Electricity Use

Table 1 Generation of Electricity by Energy Source
for 1993, 1997, and 2002

Energy Source	1993	1997	2002	Percentage Share 2002	Annual Growth 1993 to 2002
Megawatt-hours MWh (000)				%	%
Coal	5,465	8,898	9,605	15.6	6.5
Petroleum	1,475	768	730	1.2	-7.5
Natural Gas	15,545	16,987	19,069	31.0	2.3
Other Gases	86	131	90	0.1	0.5
Nuclear	24,932	13,908	30,865	50.1	2.4
Hydro	-104	-11	-133	-0.2	NM
Other Renewables	943	1,173	1,330	2.2	3.9
Other	0	0	11	0.0	NM
Total	48,344	41,756	61,569	100.0	2.7

Prepared by
New Jersey Board of Public Utilities

Frequently Asked Questions:
Energy Issues

Prepared for consideration by the
Blue Ribbon Panel on Offshore Wind

April 14, 2005

Frequently Asked Questions

How much electricity do we use in New Jersey?

New Jersey residents and businesses used 88,602,205 Megawatt-hours (MWh) of electricity in 2002, of which 61,569,387 MWh were generated instate; 12,891,034 MWh were generated by facilities out of state and imported via transmissions lines into New Jersey and 14,141,784 MWh were generated for onsite use. New Jersey has over 18,000 MW of electric generator capacity and 3,421 MW of onsite generation.

What is the average electricity use in New Jersey?

The average residential, commercial and industrial customers used 8,386 kWh per year, 80,287 kWh per year and 919,968 kWh per year respectively. The annual growth of electricity use over the last ten years was 2.7 percent with some areas experiencing a 4% increase in energy use. There are 3.2 million household customers, 419,000 commercial customers, and 13,200 industrial customers.

What is Megawatt (MW)?

A megawatt (MW) is a unit of electric capacity or electric load. A MW is equal to 1,000 kilowatts (kW). Generators depending on size have rated capacities reported as MW, kW or watts. The load of electric equipment such as light bulbs, homes, businesses and industries are rated in kW or watts. The capacity of all the operating electric generators must match the required load at the time. PJM insures that this happens. An average home load is 2 to 4 kW.

What are Megawatt-hour (MWh) and kilowatt-hour (kWh)?

A megawatt-hour (MWh) is a unit of measure of electric energy. A MWh is 1,000 kilowatt-hours (kWh). An MWh is the amount of electricity generated by a one megawatt (MW) electric generator operating or producing electricity for one hour. On an electric bill, electricity usage is commonly reported in kilowatt-hours. Ten 100 watt light bulbs left on for one hour use one kWh of electricity and at an electric rate of 11.5 cents per kWh this costs 11.5 cents.

How does electricity demand vary over the day and year?

Electricity demand increases during the workday as more businesses, schools and industries open. Over the day the electricity demand increases until midday at which time the load begins to decrease as businesses, industries and schools close for the day. This peak is more dramatic in the summer as temperatures increase with an increasing air conditioning load. In the winter there is a second peak in the evening as people come home and turn on the lights and other appliances.

What is PJM?

PJM stands for the Pennsylvania, Jersey, Maryland, Power Pool. It is the electricity control area (the electric grid) for New Jersey and other Mid-Atlantic states. All electricity essentially comes from PJM regardless of the state in which it was generated. PJM insures that there is enough power to meet expected customer electricity demand at all times plus an additional reserve margin above the peak demand is ready and deliverable in the control area. (See Map of PJM).

How does PJM dispatch electricity over the day?

Conventional nuclear or fossil fuel power plants are called on first because of their relative low cost to operate and ability to deliver power into the grid at all times and are called baseload plants. Others plants operate as “spinning” reserves waiting to be called on by PJM as the load increases during the day. They are backed off as the load decreases at the end of the day. Most natural gas combined cycle plants operate in this manner because they have higher operating costs and can deliver energy quicker when called on by PJM. PJM insures the lowest cost electricity is dispatched first, insures the reliability of the electric grid and monitors the market to prevent market powers/manipulation.

What is the capacity factor of a power plant?

The capacity factor compares the plant's actual production over a given period of time with the amount of power the plant would have produced if it

had run at full capacity for the same amount of time. A baseload conventional coal or nuclear plant has a capacity factor of 70 to 90. That means the plant produced electricity energy for the grid, 70 to 90 percent over the year. The power output, the electricity an energy system generates, depends on its capacity factor. Because their cost to operate is higher than other conventional power plants, in an economic energy dispatch system, renewable energy systems would not be called on to deliver energy except at very high demand times, except as modified by state policies.

What is the current fuel mix for electricity generation in New Jersey?

Table 1 lists the past and current generation mix

How is electricity generation transmitted and distributed to New Jersey residents and businesses?

See attached figure that describes the electric transmission and distribution system.

What policies has New Jersey developed to promote renewable energy?

The NJBPU requires that all electricity suppliers that serve load in New Jersey must provide a percentage of that electric portfolio produced from renewable resources. This is called a renewable portfolio standard (RPS). This policy insures that renewable energy sources, which are more costly to operate, are dispatched into the grid. The RPS when enacted in 1999 was initially set at 2.5 % of total electricity usage; it is currently set at 4% and increases to 6.5 % by 2008. The target is 20% renewable energy by 2020. The NJBPU has developed several funding programs, financed by a societal benefits charge on electric and natural gas usage, to assist in the construction and operations of renewable energy facilities. The NJBPU is also developing a voluntary program to assist in the purchase of additional renewable energy supply over and above the RPS called the “Voluntary Green Power Choice” program.